## munications

### **Index 1989**

Article locator organized alphabetically by subject matter.

Compiled by Carolyn M. Brown, DATA COMMUNICATIONS

This annual index covers articles published from January through December 1989. LAN Strategies Special Issues, published on March 21, June 21, September 21, and Novemer 21, are included.

= Data Letter

DataLog DI

Editorial Viewpoint/EOT Economic Newsletter E/ET

EN

IW Industry Watch

N Internetworking Views

= I AN I etter

Newsfront

Newsmake

New Products

= New Software NS

pp = Product Profile

PR Peer Review
Tariff Letter/Report

Washington Letter/Report

#### APPLICATION SOFTWARE

CAS, the inside application specifical tion NF November p. 50 Extensions to OS/2, LANs NS July p. 163

Groupware adds LAN-based scheduling NP November p. 186

Groupware: The search is on, but what does it look like? NF February p. 56

Sharing the load: Client/server computing NF March 21 p. 19 Sweet scents but little substance:

3Com's Client-Server System LL September 21 p. 13

#### ARTIFICIAL INTELLIGENCE. EXPERT SYSTEMS

IBM patent trims triteness DL

January p. 66

Step toward speak-in translator DL March p. 73

Symbolics soars Sunward D Septern-

#### ber p. 34

RELL OPERATING COMPANIES A new Nebraska law could lead to bigger bucks for all the BOCs T October p. 59

Ameniach fights for the business EN July p. 27

Bell Atlantic forgoes NAB support to keep lobbying W July p. 22

Belicore local digital standard reborn DL April p. 78

Customer premises equipment vendors W September p. 46 Most back BOC fiber; ICA head sup-

ports schools DL July p. 57 N.Y. Telephone must connect DL April

p. 79 New Co-LAN promises, and problems

D January p. 15 RBOCs form team for management

unification D February p. 15 PBOCs: Profligates or tightwads? IW December p. 69

#### BRIDGES, ROUTERS, GATEWAYS

3Com, Novell to add routing capabilities to servers D November p. 33 At 30-kbit/s, bridge keeps Token Ring and Ethernet in touch NP March 21

Autoconfiguration for Ethernet-to-Mac LAN gateway NP March 21 p. 74 Big-bandwidth bridge faces FDDI com-

petition NP June 21 p. 78 Bridge for optical networks fits bus or ring topologies NP March 21 p. 80 Bridge links Ethernet LANs to FDDI nets NP May p. 188

Bridge-on-board for MAC layer suits PC/LAN workgroups NP May p. 179 Bridging box connects up to 16 local area nets at rates to 160 Mioit/s NP February p. 172

Brouter for Ethernet and high-speed remote links is programmable NP February p. 180

Brouter links remote token rings NP November p. 166 Channel extender can put DASD 1,300

ft. away NP December p. 171 Connecting nets, a growth business IW July p. 59

Dial-in access and serial communications for AppleTalk server NP March 21 p. 76

Eight new bridges and enclosure link local and remote networks PP December p. 159

Ethernet gateway links WANs, serial devices NP December p. 163

Ethernet-based bridge increases packet rate NP November p. 166 Expanding the reach of bridges NP May p. 194

Fractional bridge, routes NF December p. 50

Gateway brings most SNA protocols to up to 128 PCs NP June 21 p. 65 Gateway expands connectivity for

3270 workstations NP May p. 175 Gateway links MACs to token ring LANs NP October p. 178

Inside routers: A technology guide for network builders F September 21 p. 53

Integrating LAN bridges into T1 muxes D June p. 16

Intelligent gateway links SNA and Ethernet networks NP April p. 164 LAN gateways: Paths to corporate connectivity F August p. 72

LAN-to-WAN gateway keeps 150 links running at 64 kbit/s NP March 21 n. 80

Module unifies WAN and LAN protocois NS December p. 186

Multiprotocol router for small LANs, WANs NP December p. 171

Netbios LANs get gate System/34, 36, 38 NP March 21 p. 74

Network bridging for IBM token rings NP September p. 160

New standard makes all existing Spanning Tree bridges obsolete NF July

Putting Eicon's X.25 gateway to the test IV September p. 25 Remote bridge links distant networks

via the wide area net NP March 21 p. 77 Remote bridges enhance LAN-LAN

connectivity NP July p. 145 Remote bridges with compression

viewed favorably NP June 21 p. 80 Repeater links 10 network segments NP December p. 170

Router roundup: Tools for network seqmentation come of age F September 21 p. 35

Routers as building blocks for robust internetworks F September 21 p. 28 Routers break performance test barriers LL November 21 p. 13

Routers connect dispersed LANs NP November p. 179

Testing IBM's remote bridge IV October p. 25

Token Ring brouter forwards 8,000 packets per second NP May p. 176 Token ring extender links LANs over DS2 NP November p. 170

Token ring nets get connections to servers, workstations NP March 21 p. 75

Two FDDI bridges link LANs to FDDI NP December p. 160

Two new bridges plus a manager for a network bridge NP April p. 162

Understanding XNS: The prototypical internetwork protocol F September Versatile gateway for LANs NP November 21 p. 70

CAD/CAM

CAD for LANs NS August p. 162 CAD/CAE market just hitting its stride EN January p. 33 Enhanced telecom CAD NS April p. 188

Gateway joins CAD programs to Ethernet NP August p. 148

CARRIERS, COMMON

MCI calls it ISDN. Is it? Not quite DL June p. 58 ... AT&T and partners get GE world contract W July p. 22

A quality comparison: which carrier tests best? F March p. 96 AT&T aggregator 800 service W De-

cember p. 46 AT&T gives a yawning response T

November p. 60 AT&T hopes price change can resurrect subrate muxing service NF February p. 60

AT&T introduces hefty discounts for volume users W September p. 46 AT&T lands two new Tartf 12 customem T October p. 59

AT&T looks for ISDN to light the way EN June p. 27 AT&T posts new Tariff 12 offering T

November p. 60 AT&T revises discount T September p. 52

p. 52 AT&T to deploy SS7 by year-end DL. August p. 56

AT&T's world to be all digital—via software—in 1992 . . . D September p. 33

Average of service costs starts rise DL May p. 69

Data Communications is an issue in MCI-AT&T lawsuit W November p. 46

Fiber networks spreading in big cities EN July p. 27 Four in NTN form new NSN DL March

p. 73 Improving digital telecom NP July

p. 148 ITT data service NP August p. 153

Launching a LAN 'camer' D September p. 33 MCI gets Shell and Merill Lynch contracts while ... W July p. 22

tracts while . . . W July p. 22 MCI offers inbound foreign service W July p. 22

MCl's new configuration service T November p. 60

New 800 service offers SDN features without big bucks W May p. 25 New AT&T volume plan for data DL May p. 69

NTN set to vie in subrate DDS market D January p. 16 Prices cut for private network service

NP March p. 206 Sprint buys half of PTAT DL April p. 78

Sprint decries Tariff 12 Options 14, 15, and 16 T November p. 60 The rise of the MAN handlers IW October p. 67

United will be late with SS7 . . . EN October p. 39

US Sprint alarms Tarriff 12, Options 18 and 19 W December p. 46 Users say carrier quality varies with service F August p. 117 Winstern Urkon blows out leased lines

DL June p. 58

COMMUNICATIONS

Add-on board for PCs can be used for specialized tasks NP February p. 182

Async subsytem links 128 devices to PC/AT system NP March p. 192 Backing up at the front end NP January p. 192

Coprocessors for multi-user environments NP September p. 161 Digital sharing unit for multipoint environment NP December p. 172

Gain capacity, speed NP March p. 213
Hardware expands switching options, boosts performance NP March p. 199

Host-end processor links SNA hosts with private packet network NP March p. 198 LAN gear links Apple, 802.3, and 802.5

nets NP November p. 186
Mustruser serial controller boards fit
PCs and PS/2s NP January p. 189
Multiple sessions and host links NP

September p. 188

NCR Comten fields a new big battery
of front-ends NF April p. 52

Network supports X.25, SNA, and T1 under one manager NP May p. 177 Processor Interfaces NS/3000 network with DECnet and SNA NP March

Pull out that PC; put in generic networking platform NP April p. 153 Serial processor for VME/Unix NP No-

vember p. 168
The pluses and minuses of the highend FEPs F August p. 103
Turnkey device unites IBM and DEC

machines NP August p. 141 Unit links LANs to host computers NP November p. 172

COMMUNICATIONS

SOFTWARE

ASCII terminal emulation package for the MVS world NP March 21 p. 76 Data communications software runs within Windows environment NS September p. 193 Kermit to speak non-ASCII: Greek,

Russian, et al. NF June p. 48
Mac users can run each other's PCs
NS October p. 206

New OS/2 software guns for DOS products NF August p. 46 OLTP networking NS August p. 161 PC Communications package runs on LANs NS October p. 206

LANs NS October p. 206 Remote communications NS April p. 190

Remote control NS June p. 154 Remote-control software: PCs apart, but not alone F April p. 121

Single interface lets networked machines run DOS and Unix NP December p. 174

Software robots NS March p. 226 TOPS support NP January p. 196 Versions of network computing syster for DEC and Sun NS March p. 225

DATABASES

Databases can respond to fax requests NP November p. 184 Hardware, software unit speeds up VAX-based Oracle applications NP November p. 165

SQL access to prod distributed database development D December p. 34 DECNET

A patent spat over LAT? D August p. 15

DEC-to-IBM connectivity NS April p. 193

DECnet support NP August p. 154
DECnet APPN NS July p. 163
Networks to suport DEC's RISC computers NP September p. 186
OSI, DECnet support NP May p. 198
Sharing among computers DECnet
time service NS April p. 193

DIGITAL SERVICES

Carrier adds switched 56-kbit/s, network management and Telex-to-fax NP March p. 206

Digital world comes to voice-grade leased lines D June p. 15 DS-0, DS-1 traffic NP June p. 140 Enigma: 2.048 Mbit/s ian't always 2.048 DL June p. 59

InterLATA Switched 56 coming soon D May p. 15

No coins needed in car-to-toll data broadcasts DL June p. 59

DISASTER RECOVERY/ BACKUP

Dial-up unit restores lines in a single call NP December p. 169 IBM starts disaster service DL May

LAN disk backup NS August p. 161 Modern watcher and digital bridge remedy failures NP July p. 147

NetView controls dial backup unit NP November p. 179

Overnight recovery for disabled LANs NP November p. 193 Programmable fallback switch helps

Programmable fallback switch helps automate disaster recovery NP February p. 178

Protecting against disk crashes, viruses, and human errors PP December p. 151

Units protect LANs from overvoltage NP December p. 167

DSUs/CSUs

Call status info NP July p. 151 50-kbit/s DSUs expand network connections NP October p. 176

Chennel/data unit supports many rates at low cost NP August p. 146 Compact unit adjusts digital data speeds NP October p. 173

Diagnostic T1 CSU meets AT&T plus ANSI standards NP January p. 181 Digital service is 'self-healing' NP October p. 173

DSU/CSU supports digital secondary channel transmission NP March p. 198

Echo canceler shut-off NP March p. 213 Extended superframe retro-fit set for

CSUs NP October p. 174
From a lamented Victoria to a highly

cunning DSU NF Merch p. 54
Making sense of midrange digital geer
F October p. 103
Variable DSU/CSU has built in network

management capability NP February p. 175

EDI

Defense's EDI network could be a legal minefield . . . W May p. 26 EDI translators NS June p. 156 Encrypted EDI: Scrambling to create a security product—sans standard NF October p. 50 Service upgrade NP March p. 210 System/38, AS/400 get international support NP December p. 174 Transaction standards NP March

p. 213
... as liability questions still need to be answered ... W May p. 26
... as well as issues of unlawful leaks.

W May p. 26

EDITORIAL VIEWPOINTS/EOT

A vote for U.S./U.S.S.R communications glasnost E/ET March p. 252 Back to the future (again) E/ET September p. 202

tember p. 222
Big Blue déjà vu E/ET October p. 13
Big blusiness bonanza E/ET July p. 184
Change, growth, and a new team for
the 1990s E/ET Junyany p. 13

the 1990s E/ET January p. 13 Enterprise-wide networking: The need for a global standard E/ET August p. 130

Fiber optics' far side E/ET December p. 198

Giving readers some space E/ET September p. 13 Heralding the age of the router E/ET

September 21 p. 9 I sing the office electric E/ET June p. 180

Inside the seat of government E/ET April p. 200

Lend me a definition E/ET August p. 13 Lesson of the lurking software glitch E/ ET June 21 p. 9

Lessons learned at fiber school E/ET February p. 13 Let 1,000 token ring vendors bloom E/

ET November 21 p. 9 Measuring ISDN's success: Are we there yet? E/ET May p. 13

there yet? E/ET May p. 13 Nonstandard standards: choking on the letter of the law E/ET January p. 226

Price caps: yea for AT&T, nay for the BOCs E/ET April p. 13 Products that I'd like to see E/ET October p. 226

Some say price looms: Boon to LANkind LL March 21 p. 13 Spec maniacs E/ET November p. 214 The \$50 million OSI industry E/ET November p. 13

The birth of DC test labs E/ET December p. 13
The networking support crisis E/ET

The networking support crisis E/E1 June p. 13 The thin green line E/ET July p. 13

The thin green line E/ET July p. 13 Trapped in the product cycle time warp PR September p. 15 Viewing quality form a long

distance . . . and locally E/ET March p. 13 Year of the LAN? No. It's the LAN era

E/ET March 21 p. 9

ELECTRONIC MAIL/MESSAGE Binary mail NP March p. 208

E-mail conference NS June p. 154 E-mail for enterprise networks NP July p. 148

E-mail package links LANs and modem communications software NS December p. 178 E-mail sercurity NP May p. 196

E-mail to IBM Profs NP March p. 214
EDI added to E-mail network NP February p. 183
Electronic bulletin board runs on LANs

NS November p. 196 Electronic-mail services connect DL

## Flash ... Ethernet Stays Connected - MultiNet

Modular Connectivity Where Reliability Counts

Multi-Media networking is a long term solution. A good reason for you to insist on automatic, real-time backup on your system's critical resources.

backup on your system's critical resources.
With VLSI technology you're guaranteed improved reliability, while outstanding diagnostics and provisions for network management to the transceiver level ensure minimal downtime.

Synchronous signalling will minimize Ethernet repeater count for you and assure maximum growth potential. And naturally, you should receive a vendor guarantee for compatibility with upcoming standards such as 10Base-T and 10Base-F.

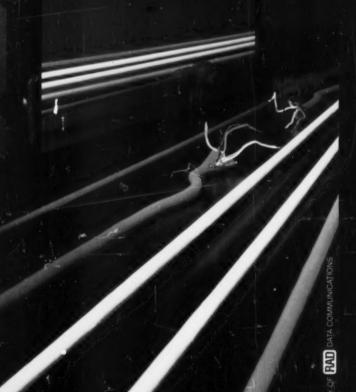
Insist on the best - MultiNet from LANNET.

Circle 122 on Reader Service Card

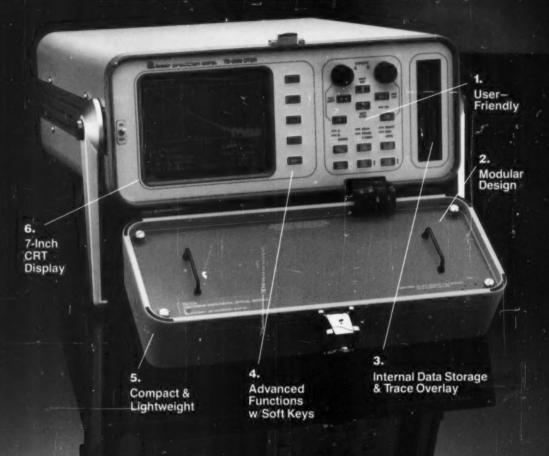


U.S. Headquarters 151 West Passaic St, Rochelle Park N.J. 07662 Tel: (201) 587-8822 Fax: (201) 587-8847 Telex: 650240364 MCI.

International Headquarters: Atidim Technological Park, Bldg.1 Devorah Haneviah St. Tel-Aviv 61131, Israel Tel: 972-3-5447150, 5447160 Fax: 972-3-5447146 Telex: 871263 RADCO IL



TD-2000...THE ULTIMATE OTDR



## SIX GOOD REASONS TO FIND FAULT WITH US

Plaser precision

1231 Hart St. - Utica, NY 13502 - (315) 797-4449 - FAX (315) 798-4038

Furnness Office: PO. Box 81094 + 3009 G. B. Rotterdam Holland + 31-19-421-8316 + FAY 31-19-455-809

Circle 121 on Reader Service Card

March p. 73

Gateway broadens X.400 communications NS December p. 185 Gateway expands the exchange of

mail NS December p. 178 Giobal E-mail accessed via standard modern. PC NP October p. 192

Going global NP April p. 168 International electronic mail services Ready for takeoff? F December p. 145

Kudos for cc:Mail: 'Easy' interface fulfills expectations NP June 21 p. 68 LAN-based electronic mail for wide-

area use NS October p. 203 Linking E-mail to PCs, LANs, faxes worldwide NS December p. 185 Mac mail for Vines NS February p. 200

Mailbox facility for client applications NP October p. 200

More E-mail services connect DL June p. 58

New fax board routes messages to users NF September 21 p. 24 New way to link E-mails gains support

NF November p. 48 Novell's LAN messaging technology: Expedient or expendable? NF September 21 p. 20

OEMs can pursue X.400 messaging

-NS December p. 178
Retix delivers X.400 E-mail for DOS/

Apple NP September 21 p. 69
Text-to-speech electronic-mail system is LAN-based NP July p. 145
VAX to Western Union NP July p. 151
VAS mail interfere NS May p. 218

VMS mail interface NS May p. 218
X.400 E-mail program delivers to Mac
users NP October p. 192

#### FACSIMILE

3+Mail-to-fax link NS April p. 188 A bill to trash floggers of junk fax W June p. 22

Fax board handles multiple LANs NP October p. 178

Fax capability NP May p. 198
Fax device relays traffic via data networks NP May p. 188

Fax from 3270s NP March p. 213 Fax gateway NS January p. 221 Fax machines flying out of Japan's factories EN February p. 33 Fax network NS January p. 219 Fax network NS June p. 140 Fax server runs on any LAN user's PC

Fax server runs on any LAN user's F NP December p. 162 Fax service NP August p. 155

Fax service spreading EN December p. 39 Fax software locks out junk fax NS

September p. 194
Fax-to-LAN increasingly popular NF
June 21 p. 24

Going crazy over fax pollution D June p. 16

PC-fax board offers background operation NP November p. 168

PC-Fax-LAN file transfers NS August p. 161 PCs can exchange faxes worldwide

NP December p. 174 Q-bus interface lets MicroVAX speak

fax NP November p. 170
Saavy switchboard distinguishes between fax and voice calls NP July
p. 144

Software package puts fax at the fingertips of LAN users NP March 21 p. 78

Text-to-fax service NP March p. 208

#### **FACTORY AUTOMATION**

Big MAP trek from DEC to Detroit says: 'GM: You win' LL June 21 p. 14

Inactivity unlikely on MAP DL January p. 66 Interface board joins PCs to MAP NP

September p. 173

LANs stroll out of the office and down to the factory floor NF August p. 51

MAP-based bridge, board for networking NP December p. 164

New trouble for MAP: Boeing backs Ethernet DL May p. 68

#### FIBER OPTICS

Coming soon to an outlet near you: Premises fiber F February p. 88 Ethernet interface combines with fiber optic local area net NP January p. 183

Ethernet transceiver solves fiber problerns NP September 21 p. 72

Fiber optical channel extender stretches link to six miles NP June p. 133

Fiber token ring LAN extender pushes more data further NP February p. 181

Fiber transmission extended to 3,700 miles—without repeaters NF February p. 54

IBM midrange systems run over optical fiber NP December p. 170 LAN uses plastic and/or glass optical

fiber; runs at 2 Mbit/s NP January p. 175 The man who made an 'RS-232' for

The man who made an 'RS-232' for optical fiber links NIM February p. 85 U.N set to build global optical network, disk-based D April p. 16

#### FILE TRANSFER

Board transfers files between MacIls, IBM NP December p. 170

Expanding Unix, Xenix communications NS December p. 185 File transfer compression NS March p. 228

File transfer package for VM, MVS hosts NS September p. 196 Host package for file transfer terminal

emulation NP March 21 p. 82
Host-initiated file transfer NS June
p. 168

Point-to-point transfer for IBM computers NS December p. 185

Smart connector and software make parallel ports perfect for file transfers NS February p. 197

Transfer card sends data automatically between PCs NP July p. 140

#### **GOVERNMENT NETWORKS**

And who pays for CALS network failures? W May p. 26 Defense drops DOE as data network

prototype D March p. 16 Gore going great guns for Gbit/s DL

August p. 55
Small mux fits DOD needs with—Tempest tweaking W June p. 21
Will Soni serve as sole scapegoat? DL

### July p. 57

Add graphics supercomputers to networks NP August p. 148 Emulating graphics NS May p. 218 Host graphics for Mac NS February p. 203

#### INDUSTRY ECONOMICS

... and then keeping it for yourself EN June p. 27

... but no official word EN May p. 33 ... What are you selling, Monty EN July p. 28

3Com loses market share in Ethernet boards LL November 21 p. 14 A general computer sales slowdown

EN September p. 39
A medley of mergers, takeovers, and acquisitions EN August p. 33

A turned-around Infotron credits overseas campaign IW May p. 77 A year of waiting for another to begin

so something significant could happen fW January p. 71 Arnnet to bag a big OEM? D October p. 34

Apple catches consumer's computer eye EN January p. 33 At AT&T-Tridom a customer complains

EN November p. 39 AT&T close to Italian partnership DL

March p. 72 AT&T moves fast in Europe EN November p. 40

AT&T to flog DCA switches and corner the market D May p. 16 Brits on merger spree EN April p. 35 Cableton's grand plans seen as too

Cabletron's grand plans seen as too rich by some EN May p. 33 Capital spending slowdown to brake

PC growth, but networks soar IW January p. 95 Choosing a vendor EN November

p. 39

Codex wins contract, loses workers EN December p. 40 Digital Microwaye's BT orders lag, but

over all sales jump EN December p. 40 Encore serves up profits for Xylogics

LL November 21 p. 14
Executive flight from Telematics . . . EN
May p. 33

Exposing the one-stop humbug NF October p. 60 GEIS goes grandiose in Italy D June

p. 16
Growth by buying niche players EN

September p. 40
Harris to dump and then regroup NF

September p. 54 Hewlett-Packard buys Apollo DL May p. 69

IBM is not the only way to win EN March p. 33

IBM ties to Northern denied EN December p. 39 Index continues plodding along EN

January p. 33 Index glides up; retail PC sales flat over

January EN May p. 33 Index opens new year with a blast EN April p. 35

Index takes a leap at year end EN
March p. 33

Index trails off again in November EN February p. 33 Index up slightly in March; LAN outlook

brightens EN June p. 27 Inside the 3Com/HP LAN pact: An open door for Novell? NF April p. 64 LAN Links and switches proliferate D December p. 33

Let's make a deal . . . EN July p. 27 Low stock valuations lead to mergers EN February p. 33 Lowe goes to Xerox; Why? DL January

p. 66 Making it in New Hampshire . . . EN June p. 27

Meanwhile, back at AT&T's Skirnet group EN November p. 39 Merger and acquisition roundup EN October p. 40

Mergers and acquisitions EN September p. 40

Mergers, acquisitions, and alliances EN November p. 40 Microsoft bypasses Excelan D Octo-

ber p. 33 Mixed news on U.S. imports EN April p. 35

NET builds profits EN December p. 39 NET scores a coup in Europe D Octo-

ber p. 33 Newbridge readies its intitial stock sale EN August p. 27

Novell shows third-party support wins few fans D December p. 33

Novell weds COS . . . W August p. 21 One balmy day in June, Sun was eclipsed EN July p. 28

Picking winners: Rising stars likely to shine in 1989 IW January p. 89 Rumors fly that Motorola is eyeing DCA D June p. 16

Sales of imaging networks seen on rebound EN October p. 39 Semiconductor sales growth to slow worldwide EN February p. 33 Sytek slides into GM subsidiary DL

Sytek slides into GM subsidiary DL. April p. 78 Telecom equipment production slows

in Japan EN March p. 33 Trolling for a workstation manufacturer EN January p. 33

U.S. firms tap foreign customers for growth EN March p. 33 What's inside the great HP and Apollo

merger? NF June p. 50
Will BT stretch Tymnet far across the
Atlantic? NF September p. 54

#### ISDN

... Which means ISDN by 1990 D September p. 33 Adding ISDN NP July p. 151

Adding ISDN NP July p. 151

An update on U.S. services and standards F May p. 129

Are switch biomies obving Relicone the

Are switch biggies giving Bellcore the ISDN razberry? D May p. 15 AT&T will mix ISDN and fractional T1 D November p. 33

Basic-rate tester troubleshoots ISDN communications lines NP March p. 192
Board and software link PCs over ISDN

network NP August p. 144 BRI and PRI ISDN part of new PBX design NP March p. 190

design NP March p. 190
Canada sets multicity ISDN trials DL.
February p. 66
Details bared on additional ISDN

'pieces' for 5ESS D February p. 16 Hitachi hits the ISDN trail D March p. 15 How to make the PBX-to-ISDN connection F May p. 91

IBM's quiet OS/2 lock on ISDN terminal adupters D August p. 16 Incentives to ISDN are surely kosher, says ham operator NM October

says ham operator NM October p. 75 is ISDN an obsolete data network? F November p. 103

ISDN and OSI spur global issues at Interface '89 F February p. 167 ISDN is new Parisian style DL January p. 66

ISDN software NS February p. 202 ISDN's seven deadly sins E/ET February p. 208 ISDN: Not so sinly or deadly E/ET May p. 230

Knocking on users' doors: Signaling System 7 F February p. 147 Making the most of ISDN now F Au-

gust p. 89 Mastering SS7 takes a special vocabulary F February p. 163

Move over, ENE: A huge ISDN disply may get on the road D January p. 15 New software enhancement brings

SS7 within reach NP April p. 166 Pac Bell to hop on the ISDN trail NP November p. 191

Private ISDN NP July p. 151 Stuffing more data into twisted pair . . D April p. 15

Switch software links LANs to ISDN NS September p. 202 The evolving versions of ISDN's termi-

nal adapter F March p. 133 Tips for Europe's ISDN pioneers F May p. 111

V.32 modern supports multiple speeds with automatic fallback NP January p. 187

Will a new standard-in-process push ISDN to the desktop? It just might NF July p. 52

#### LOCAL AREA NETWORKS

... Then how close FDDI backbones? D May p. 16

10-Mbit/s LAN runs over twisted pair NP September 21 p. 77 16-Mbit/s backbones? Not so fast...

D May p. 16 802.3 bridge said to have lowest price

802.3 bridge said to have lowest price NP September p. 159 A common API for LAN directory ser-

vices D August p. 15
A home-brewed remedy for high token ring installation costs E Nevember

ring installation costs F November 21 p. 45 A.C. power grid builds LAN network

A.C. power grid builds LAN network that runs 19.2 kbit/s NP March 21 p. 73

Adding LAN memory NS April p. 190 Apples and Ethernet NP May p. 200 Application kit links mainframes to each other over Ethernet NP July p. 140

Arcnet driver NS March p. 234
Are dumb boards beautiful? NF November p. 54

As 16-bit Ethernet boards emerge, prices fall D July p. 15

As PC sales slow, will LANs trail behind? EN September p. 39 AT&T seeking ISDN-LAN links: new

AT&T seeking ISDN-LAN links; new concept: Virtual LAN LL. June 21 p. 14

Beefed-up directory service for LANs NP November p. 188

BICC clicks with Ethernet-to-Micro Channel card NP June 21 p. 76 Breaking the token bottleneck D December p. 34

Bridge lets users link token ring networks with token buses PP September p. 153

Broadband modern, bridge manager add to LAN performance NP April p. 163

Card brings Token Rling to variety of media NP April p. 165

Clards link Macs to Ethernet LANs NP September p. 171

Clawing and hissing for a piece of the LAN kitty's tail EN August p. 27 Compact box makes device sharing easier NP December p. 166 Day-Oh Day-Oh: The banana boat LAN LL June 21 p. 14

Dennis upbeat, Greene less so, about ONA rules W January p. 25 Ethernet boards have memorymapped I/O NP September p. 175

Ethernet contoller supports OSI, TCP/IP NP October p. 179

Ethernet transceiver has diagnostics NP September p. 172 Ethernet-to-token ring: The gap begins

to narrow NF April p. 47 External adapter links laptops to

Ethernet NP September p. 172
Faster Arcnet NS May p. 219
FDDI-based units offer more to link
networks NP October p. 192

Fiber optic transceiver bring fiber Ethernet to the PC NP October p. 173

Getting a handle on FDDI F June 21 p. 28

Getting the most out of Ethernet's data link and transport layers F March 21 p. 53

Hand-held workstation has Ethernet bus; sends 230.4 kbit/s NP June p. 124

How strong is the LAN industry? 3Com and Novell raise some doubts EN September p. 39

How to design and build a 16-Mbit/s Token Ring F July p. 91

IBM serves up a gold-plated LAN strategy F October p. 81

IBM to support 16 Mbit/s on unshielded twisted pair? D July p. 15 Inside Token Ring Version II, according

to Big Blue F January p. 117 Interface links bus architecture with Token Ring LANs NP June p. 131

It's too soon to be chipper: The hidden costs of FDDI NF October p. 45 LAN adapters link Macintosh EtherTalk networks NP January p. 183

LAN card lets laptops latch on to networks NP October p. 196 LAN functionality for PCs NS March

p. 227

LAN gear runs token rings on UTP,
STP NP Saptember p. 174

LAN-ware NS May p. 216 LANs have a long way to go EN January p. 33

Longer file names for PCs on LANs NS September p. 198

Low-cost PC network suits workgroups of eight to 16 users NP June p. 131

Mac logic NS January p. 219
Make a LAN from two PCs with starter
kit NP September p. 173

Managing Ethernet sprawl F May p. 141 MCA and busmaster: A boon for data

users? NF March p. 58
Media filter lets 16-bit/s token ring
cards use unshielded twisted pair
PP November p. 151

Media litters meet or exceed IBM specs for use in Token Ring nets NP March p. 204

Migrating to FDDI on your next big LAN installation F June 21 p. 35
Mixing twisted-pair and fiber optic media on Token Ring LANs NP May

p. 174 Modular hardware, software comes to embryonic LAN-FDDI market D September p. 34

More LAN memory NS July p. 174 More LAN space NS August p. 163 Multimedia Ethernet with redundacy NP January p. 177

Multiple access unit expands token ring networks NP August p. 142 Multiport Ethernet transceiver has

ports for copper or fiber NP January p. 187

Multiport repeater connects twistedpair and coax Ethernets NP March p. 199

Multiport repeater for thin Ethernet NP November p. 171

Multitasking program eliminates RAM cram NS November p. 196 Multivendor token ring network comes

of age F November 21 p. 37 Netbius for Arcnet nets NS March p. 238

New Apple products bodly go where others have gone before NF July p. 48

New Token Ring versus Ethernet counterpoint F January p. 127

OS/2 gets Ethernet enhancements in a mainly marketing move by Big Blue NF June p. 39

PCs share disks NS January p. 218 Protocol interface for heterogeneous LANs NP November p. 171

Putting Apple's token ring solution to the test IV November p. 25

Racking up profits in the LAN business EN August p. 27 Ring repeater and fail-safe MAU meet

IEEE 802.5 specs NP February
p. 175

Save that LAN! Preventing network crashes F April p. 93

Second-generation token ring LANs: Evaluating the need for high speed F March 21 p. 47 Sherlock Holmes goes broadband LL

September 21 p. 13
Testing LANs rewards investors twice

in 1989 EN October p. 39 Through the looking glass: The LAN speed record heats up F January p. 110

Token Ring adapter and media access ring are announced NP May p. 182 Token Ring base growing, and grow-

ing more critical F June 21 p. 47
Token ring compatibility: It's time to plug and play F November 21 p. 26

Token Ring network users get help with multistation acess NP March 21 p. 79

Universal gateway lets users access any LAN resource NP April p. 154 Upgraded LAN NS May p. 215

Using Ethernet to connect token rings PR November p. 15 What will UB's unshielded token ring

cost? DL. July p. 57
Which side will they choose in the FDDI interoperability war? NF October p. 48

Wider options given to Ethernet LAN users NP December p. 164
Will open trend lead to vendor special-

ization? LL March 21 p. 14 Work begins on 802.3 hub management standard D October p. 33

Workstations resp the rewards of FDDI via new controller board PP November p. 157

X Window spawns a terminal that acts more like an Ethernet workstation NF January p. 52

#### MAINFRAMES

High-performance interface solves

communications bottleneck NF December p. 64

IBM hosts gain better batch communications NP November p. 193 Link IBM mainframes to high-speed network NP September p. 160

#### MICROCOMPUTERS

Miniature diskless workstation runs on your choice of LAN NP July p. 142 A slew of new products for Suns: Workstations gain connectivity NP November p. 184

Diskless workstations run on Novell LANs NP September p. 174 Multi-user cards have on-board proces-

sors plus RAM NP January p. 178
One board supports IBM's Micro Channel, PC architectures NP August p. 142

#### MICRO-TO-HOST CONNECTIVITY

Emulator hooks five PCs to IBM mainframe, replacing boards, control ports NP July p. 137

Enhancso programs for PC-to-host communications NP October p. 194 HLLAPI: The bridge from DOS and Unix to mainframes F November 21

p. 51 Improved integration NS July p. 175 Linking PCs to hosts through 3780/ 2780 emulation at 56 kbit/s NP May

p. 181 Linking PCs to mainframes NS August p. 159

Mac to mainframe NS March p. 234 Macintosh-IBM link NS August p. 160 Package helps PC users run mainframe applications NS November p. 195

PC users access VAX with Mac software NS September p. 194 PC-to-DEC software now supports

LAT NP September p. 188
PC-to-host package moves data without format changes NS April p. 187
PC-to-mainfrme RJE unit provides fullduolax connections NP August

p. 140 Product upgrade NS July p. 175 RJE-ware NS May p. 215 VAX-PC link NS August p. 162

#### MICROWAVE AND WIRELESS COMMUNICATIONS

Bell Labs invents radio LAN, but FCC won't put it on the air D January p. 15

Data radio modern aids PC communications NP November p. 172 Dialing data via mobile telephones F

October p. 119
Digital cellular business bolsters Texas firm EN September p. 39
Digital el deta po in program cell

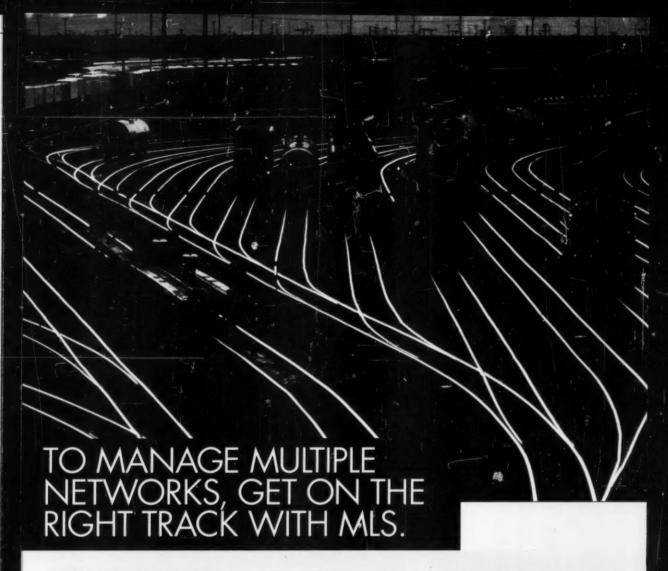
Digital, si, dara, no, in pending cell standard D October p. 33 Packet modern lets keyboard printers communicate by radio NP March

p. 196 Unit replaces LAN and terminal cables with infrared light NP August p. 143 Wireless LAN lets users network without cable NP July p. 138

#### MISCELLANEOUS

A data-over-voice renaissance? NF December p. 56 Building digital storm cellars to back up

TAT-8 NF April p. 50 Customer support NP July p. 152



## MLS connects and manages up to ten local and remote networks.

You depend on your networks to carry essential information throughout your company. Now there's a product that connects your networks and increases their performance, while providing you with sophisticated management capabilities to keep them up and running. It's the new MULTILan Switch - MLS - from Alantec.

MLS interconnects Ethernets of various media, including thin Ethernet and fiber optics. So you can increase communications by connecting all your users across a building, across a campus, or across the country.

MLS also provides network management features that allow you to monitor the activity of your networks for optimum performa.ice. It displays this information in real-time, then saves all performance statistics to provide you

acs to provide you with an archive of network activity. By installing a SMARTLan Manager anywhere on the network, you can monitor the activity of all the LANs from one central location. In addition, MLS provides advanced filtering capabilities

for control, plus increased network reliability, security, and more.

#### A high-speed backbone in a box.

MLS is all you need to connect and manage your networks. It's the highest performance interconnection device you can get for multiple networks. And it's available now from Alantec.



Call today to receive a free MLS product information package. 1-800-952-6300 ask for dept. T53

**TLANTEC** 

Multi-LAN Management Solutions

101 Hammond Avenue, Fremont, CA 94539

 MLS can be configured with up to ten Ethernet ports, and switches packets at 160 Megabits per second for optimum

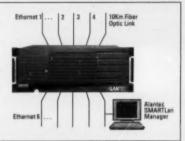
response time.

• MLS reports on performance

statistics for each LAN segment

• MLS lets you isolate traffic to
ensure security throughout the
network.

 Diagnostic features ensure MLS reliability.



#### **Built-In Media Filters and Fiber Optics**

You know the feeling. You specify a Token Ring MAU for a good price only to find that it won't support fiber optics or unshielded twisted pair without costly add-on options.

Adding those options will cost more than the original MAU. That's why our new 861 comes with everything you need to support fiber, shielded or unshielded twisted pair. It provides ring-in and ring-out connections with Universal IBM connectors and fiber optics.

Ring diagnostics are provided too. With front panel control of ring test and configuration switches, you can isolate faulty lobes without disconnecting any cables from the MALL No more Christmas tree light searches for problems.

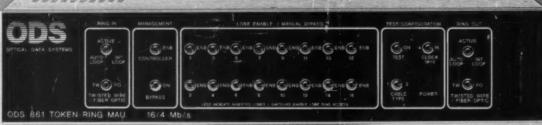
The 861 will even accommodate full SNMP Network Management with the addition of one card. It will also report to Netview ring diagnostics down to the device, packet and lobe level.

In fact, the capabilities of the 861 will cover your network needs right out of the box. With built-in options that you'll pay the other guys a lot to add on. So if you think you'll ; ever need fiber, twisted pair or common-sense diagnostics, only one MAU comes fully loaded. The ODS 861. Just call 214/234-6400, or write Optical Data Systems, 1226 Exchange Drive, Richardson, Texas 75081.



## Token Ring. Fully Loaded.

16/4 Mb/s Multimedia MAU



© 1989 Optical Data Systems, ISM and Network are resistened trademarks of Internal Systems (Inches December)

Dartmouth scraps MS program DL January p. 66

DataAmerica bankrupt DL June p. 59 Data Compression products associate protocols with ports PP September p. 147

ETN group spreading into more data areas D January p. 16 Farewell to the free Minitel? DL March

Farewell to the free Minitel? DL Marc p. 73

Fiber replaces twinax to link IBM devices NP November p. 175 Finding LAN files NS August p. 163 High-flying Hughes earns its wide area networking wings F February p. 121 IBM plans major video rollouts D July

Integration tools NS March p. 230 LANs surge, so does this ad: Wanted, LAN manager F March 21 p. 61 Mac-WAX-Wang linking NS June p. 158

Mainframe and PC users share an async departmental printer NP January p. 188

Modular unit protects voice, data equipment NP October p. 187 Multimode terminals emulate VT220 NP

November p. 180 Near-atomic wires; maybe tiny cables? DL April p. 79

Network routes traffic without a cop D August p. 15

Optically isolated RS-232 to RS-422 adapter has extended range NP March p. 201

Marca p. 2017
PictureTel WAR NP April p. 170
Speedier service NP February p. 184
Symplex plans compression for ISDN,
DDS circuits D July p. 15
3Com info on-line NP July p. 152

#### MODEMS

14.4-kbit/s modern has multirate error reduction encoding NP August p. 141

 kbit/s modern for leased, d'al-up lines NP November p. 175
 2-kbit/s modern with Trellis encoding for less than \$2,000 NP May p. 192

 2.4-kbit/s modern has V.42 error correction NP October p..183
 9.6-kbit/s moderns are network-manaced NP September p. 178

aged NP September p. 178 9.6-kbit/s V.32 modern sells for under \$1,000 NP October p. 181

A crock of features for 9.6-kbit/s moderns NP December p. 176 Another V.32 modern has data compression NP October p. 180

Are they truly the Three Stooges of Modemdom? D May p. 15 Board combines synchronous modern with SDLC adapter NP January p. 179

Chips will crimp moderns D March p. 15

Combined trellis coding speeds modem transmission rates NP July p. 142

Dial-up moderns with extended versatility NP September p. 180° Dual fax/data modern sells for \$199 NP

September p. 178
Fax and high-speed modern users face
ADPCM woes NF December p. 45
Half-size card is V.32 modern, sync

adapter NP December p. 167
High-speed modems may have shaky hands D April p. 15
Improving V32 modems NP May

Improving V.32 moderns NP May p. 192 internal modern for Machintosh lis runs 2.4 kbit/s with MNP 5 NP May p. 181 Internal modern offers multiple options NP October p. 185

Measuring moderns' moxie F February p. 121

Modern controls net, handles diagnoetics NP September p. 178 Modern line incorporates V.42bis data

compression PP October p. 153
Modern pack exchanges files with remote Macs NP October p. 194
Modern price cut NP August p. 153

Modern price cut NP August p. 153
Modern protocol lets users get files
faster NP August p. 148
Modern protocols NP April p. 168

Modern series sees double; Two views of network management NP May p. 173

Modern supports asyn and sync applications NP July p. 144 Modern-sharing software opens access NS October p. 204

Monitor moderns with two kinds of managers NP August p. 137 Multimoderns quietly go about bypassing a comucopia of standards NF

May p. 52 New V.22 his modern uses MNP 7 protocols for better error control NP

February p. 176
Rackmount V.32 unit with data compression NP September p. 178
Son of the Demon Dialer, 'private eyes,' and other finds at Comdex NF

January p. 56 Standards setters weigh the 14.4-kbit/s modern and a V.32 handshake D October p. 34

Tiny short-haul modern sends data four miles NP September p. 182 Users swear by their moderns F Octo-

ber p. 137

V. 32 is follow-on to a product shown three years ago NP February p. 181

V. 32 has high hand in modern industry.

V.32 has high hand in modern industry IW August p. 57 V.32 modern has dial backup for

 v.32 modern has dial beckup for leased lines NP October p. 181
 v.32 modern has modules that can be programmed NP February p. 178

V.32 modern works on two-, four-wire lines NP October p. 183 V.32 moderns will talk to slower devices T November p. 64

Vices 1 November p. 64
Vertical 2.4 kbit/s modern saves space
NP October p. 182

World's tiniest modern has MNP Class 5 NP November p. 174

#### MULTIPLEXING

DS-3 can be a LAN backbone, thanks to multiplexer NP July p. 137 Fiber optic mux links LANs, terminals

NP November p. 176
Four-port mux is also a V29 19.2 kbit/s modern NP December p. 168

modern NP December p. 168 Fractional muxes NP August p. 148 Multiplexer mixes voice and data on

digital lines NP July p. 138

Mux for composite T1 networks that
use fiber and copper NP February
p. 181

Mux integrates 56-kbit/s links into corporate backbone NP March p. 197 Short-haul multiplexer runs at 38.4 kbit/ s NP September p. 159

s NP September p. 159 Statistical multiplexer handles 32 channels at 9.6 kbit/s per channel NP May p. 176

Statistical mux has better compression to boost performance NP April p. 153

T1 shuffle: Telenet switches D February p. 15

Using testing to pick the right multiplexer F July p. 113

#### NETWORK DESIGN/ IMPLEMENTATION

Data-modeling software NS March p. 227

Graphics workstation for network design NP November p. 177

How an airline switched its network design—and saved \$2.5 million a year NF June p. 54

Japanese designers can use U.S Software NP September p. 188 LAN simulation tool yields surprises D December p. 34

Network CAD NS February p. 201 Simulator supports interactive design NS September p. 200

WAN mapping tool NS March p. 232 WAN planning NS May p. 217

#### **NETWORK ECONOMICS**

Coping with the cost realities of multipoint networks F July p. 125 Leasing becomes a user's paradise IW June p. 61

Making your network make money F June p. 83

New ideas needed for global networking PR December p. 15

#### NETWORK MANAGEMENT/ DIAGNOSTICS

A name for everything, and an address to put it at D March p. 16 Alphabet City: IBM takes a new acronym to the streets D November p. 34

Analyzer troubleshoots token ring LANs NP September 21 p. 82 Apple analyzer NP August p. 155 AT&T protocol, network p. 196 Lunite NP October p. 196

unite NP October p. 196
Berichmarking the devices that measure LAN protocols F March 21 p. 33
Big ours take aim at wide area net-

work management NP April p. 166
Box lets Ethernet LAN managers keep
track of node locations NP July
p. 136

Breakout box monitors RS-232 interfaces NP September p. 162 Cable testing NS March p. 226 Capubilities addled to digital test equipment NP November p. 184

Central control NP June p. 138
Comparing T1 carriers via central monitor that does remote tests NP January p. 175

Data unit examines transmission problems NP October p. 177 Data unit monitors T1 and ISDN net-

works NP September p. 170
Data-line monitors test high-speed lines
NP October p. 176
Device monitors Ethernet networks NP

September p. 176 Digital tester covers more applications NP October p. 190

Displacing network headaches NF May p. 56

Examine the innards of a token ring LAN with network analyzer NP August p. 137 Failing PCs get help from network

monitor NP March 21 p. 72
Fast fixes for LAN users with
NETRemote NP September 21 p. 87

Fiber optic probe safely measures isolated voltages NP March p. 204 Hand-held analyzer combines capabilities of several instruments NP March p. 194

Hand-held tester monitors serial data NP November p. 178

Hand-held universal breakout box checks parallel interfaces NP March p. 199

Host connectivity NP February p. 185 IBM crimps 'user ecstasy' D May p. 16 International network manager runs on VAX NP July p. 146

ISDN tester, hand-held DS-1 monitor simplify troubleshooting tasks NP February p. 172

LAN analyzer picks out bottlenecks, cable breaks, and other knotty net glitches NP March 21 p. 71

Loopback-access units are remotecontrolled NP September p. 164 Low-end muxes added to T1 management gear NP December p. 169 Management Forum picks protocol DL March p. 72

March p. 72
Management program graphically displays LAN NS March p. 225
Management upgrade NP February

p. 185 Managing dial-ups from a central PC in nearly real time NP June p. 123 Managing networks NP January p. 196

Managing networks NP January p. 196
Managing networks of the '90s F December p. 127
Managing token times NS August

Managing token rings NS August p. 161 Monitoring LANs from a distance NF

November 21 p. 17
Net administration package simplifies management NP March 21 p. 82
Net management NP April p. 170

Net management NP April p. 170 Net management NP March p. 208 Net/liew shows highs and lows of net management F July p. 85

Netview/PC: Users are just saying 'No' NF January p. 49 Network management: The vendor's

Network management: The vendor's burden IW April p. 81 Network test gear earning better grades for ease of use F May p. 137

Off-line gear uses polling to test 5250 peripherals NP January p. 189 On-line network management NP May p. 192

OSI-based net management: Is it too early, or too late? F March p. 111 PCs as protocol LAN analyzers NP December p. 166

Performance boost NP August p. 155 Portable cable tester automatically finds faults on LAN lines NP August p. 143

Program monitors and gives network advice NS December p. 187 Protocol analyzer evaluates ISDN, SS7, X.25, and SNA nets NP March p. 196

Protocol analyzer works with 4- or 16-Mbit token rings NP January p. 179 Protocol analyzer yelids real-time data capture at 256 kbit/s NP January p. 188

Protocol analyzers gets enhancements NP September p. 186 Protocol analyzers test ISDN networks

NP October p. 190
Remote tester monitors multiple interfaces NP September p. 166

Removable protocol analyzer makes LANs more secure NP April p. 160 Rolling your own net management PR October p. 15

Running other people's networks; \$800 million for off-loading headaches? IW March p. 77

Serial data NS January p. 218
Serial testing NP August p. 153
Session, node monitor for broadband
network NS December p. 186

Simulating packets helps diagnose nets NS September p. 198 Smarts in new analyzer diminishes brain drain on user D February p. 15 SNMP-based network management

NS July p. 163 Software that manages token ring LANs NP November 21 p. 66 Spectrum analyzers are programmable

NP September p. 164
T1 tester examines data lines, protocols NP September p. 171
T1 toolbox NS February p. 201
Test set analyzes, monitors LANs, WANs NP October p. 176

Test switch accesses data, analog circuits NP October p. 177 Test unit facilitates data analysis NP

September p. 170
Tester troubleshoots Signaling System
No. 7 NP December p. 162
The Integrator: A study in data limita-

tions IW April p. 82 The true gen on LAN downtime LL September 21 p. 14

The Virtual Route Analyzer brings a boomlet to Blue's nets NF May p. 56 Three-way testing NP August p. 154 Tiny portable monitor for digital facilities NP December p. 161

Troubleshooting network problems: By the numbers F May p. 163 Upgrade for analyzer NP February

p. 185 Versatile management system monitors modems from any vendor PP December p. 155

Wider management of voice, data networks NP November p. 188

#### NETWORK OPERATING SYSTEMS

LAN emulation NS February p. 200 LAN Manager and LAN Server to interoperate D December p. 33 Mac NetWare NS March p. 234 Managing LANs NS January p. 217 Microsoft to bypass the OEMs? D September p. 34

Negotiating peace for mistmatched LANs NF September p. 45 NetWare on host NS May p. 219 NOS plus database NS June p. 156 Novell upgrade puts more Macs on networks NP October p. 196

Putting the spotlight on Novell's NetWare 386 NF June p. 39 Simultaneous access NS July p. 171 Software lets Novell LAN users add OS/2 machines to networks NP Sep tember p. 186

What's a user to do when servers crash and NetWare 2.12 albends out NF September p. 50

#### NEWSMAKERS

A former tail gunner draws a \$1.5 billion bead on Comsat NM November p. 79

Defining 'quality' dial-up lines: An AT&T insider's perspective NM March p. 91

France's Telecorn chief looks at 1992 . . . and beyond NM June p. 73 Head of quantum phenomena and device research forsees a turnaround NM April p. 89

Key author of plans to reform European voice, data traffic IW January p. 107

Making do with little while the UN studies building a major network NM December p. 85

Nominee to head FCC plays his binary cards NM August p. 67

Thou shall not create worms: The drafter of Internet's ethics code NM July p. 69

Xerox scientist looks past distributed computing to human behavior NM September p. 79

#### OSI

America's first OSI testing service D July p. 16

An eighth layer for OSI? NF May p. 48
Deutsche mark data flow in FTAM files
D March p. 15
FTAM good on local IBM-Apple-VAX

connections IV December p. 25
IBM soon to join OSI Forum, unveil OSI

management D August p. 16
Netbios to run over partial OSI: A MAP/
TOP spec that may stick NF October p. 54

New FTAM NS July p. 171 Old foes become new friends W April p. 26

Opening a file on FTAM F November p. 119

OSI on PCs: Bringing the world to the desktop F April p. 107

SNA and OSI: Which manages multivendor networks best? F April p. 133

The birth of OSI TP: A new way to link OLTP networks F November p. 141
The French Connection: IBM does OSI over Ethernet NF July p. 44

Toddler OSI inches its way to adulthood IW November p. 69 Toward global OSI conformance D July

Turnkey OSI NS July p. 173
Vendors are perched upon the homs
of the great new OSI testing dilemma NF October p. 52

What about the I in OSI? NF November p. 56

#### PACKET SWITCHING

Combination switch has X.25 and non-X.25 capabilities NP July p. 141 Coprocessor doubles price/performance of earlier models NP April

p. 158 Enhancing X.25 network NP June

p. 136
Frame-relay services promise WAN bandwidth on demand NF July p. 39
High-speed X.25 board, protocol ana-

lyzer introduced NP May p. 182 ISN interfacing NP January p. 194 Italians en route to trial of fast packet switching D June p. 15

LAN-to-LAN via X.25: Hunting the bandwidth hog NF July p. 42 Midsize multiprotocol packet switch is small enough to stack NP July

Network devices merge X.25, SNA NP October p. 198

New signs of life for packet switching F December p. 90

Packet switch features public data gateway NP December p. 173 Packet switches feature multifunction board NP May p. 190 Packet upgrades NP May p. 196

Packet upgrades NP May p. 196 Scaled-down, a fast packet switch handles remote integration of data, voice, video NP March p. 189

Three X.25 products and voice digitizer enhance network line NP March p. 189

X.25 access points NP January p. 194 X.25 debug software for private packet nets runs on PS/2 NS April p. 187

X.25 networking for PCs NS February p. 196 X.25 PAD supports more network pro-

tocols NS November p. 198
X.25 runs Xenix PCs NS March p. 231
X.25 software for bridging remote

LANs makes most out of PCs NP March 21 p. 77 X.25 switch, mux, and net manage

ment are unveiled NP June p. 125 X.25-based access to hosts NS May p. 209

#### PBX

Callquest add-ons NP April p. 166 Increase capacity NP March p. 212 More users switch data through PBXs F September p. 123

#### PROTOCOLS

An IBM ghost rises at X/Open D November p. 34

Header prediction will boost packet throughput NF August p. 39 New LAN protocol promises multi-

New LAN protocol promises multimegabit/s throughput NF March p. 49

Protocol inventor would like to see overhead cut to zero NM May p. 85 The IBM protocol that IBM doesn't use NF May p. 45

Universal data link NP May p. 200 'Light weight' protocol coming LL November 21 p. 13

#### REGULATIONS, INTERNATIONAL

Conflict brewing over Europe's leased lines DL April p.79

Europe mulls over a phone standard NF May p. 60 Friction looms over European VANs DL

August p. 55
Japan fights over AT&T breakup DL

Japan rights over AT&T breakup DL June p. 59 NATA asks Congress to go easy on

NATA asks Congress to go easy on Japan in telecom trade imboglio W July p. 22

One-stop shopping for data users: An old friend comes to a new Europe NF April p. 62

Untying Europe's tangled web of cornmunications F March p. 171

#### REGULATIONS, NATIONAL

... and sanctify telco/cable deals W April p. 26

... But is it sauce for the gander T September p. 52

... while the FCC meanders with GAO W April p. 2 101st Congress will try to pull Judge Greene's claws W April p. 26

Greene's claws W April p. 26 65 Justice asks Greene to let BOCs help third parties make phone equipment W February p. 26

Appeals court breaths new fire into ONA brouhaha W February p. 25 AT&T loses Tariff 12 battle, but may still win the war NF May p. 54 AT&T's Tariff 16 challenged by IDCMA W February p. 26

Bill to make sure large users share network costs W June p. 22 Carriers and CPE makers object to

Tariff 12 W July p. 21 CBEMA to FCC: Let a multitude of unfettered vendors bloom quickly W August p. 21

Commerce to fiddle with HDTV flap W March p. 25 Congress to get mean with Greene W

June p. 22 CPNI mailings yield a wretched response W March p. 25

D.C. to go fast and glassy come 1990 W August p. 22

FCC gives green light to AT&T ONA but wants BOCs' plans revised W January p. 25

FCC gives nod to AT&T Tariff 12, options VI and VII T September p. 52 FCC holds out new hope for gear formerly found faulty W September

p. 46 FCC kills—er, maims Tariff 15 T December p. 60

FCC upholds Tariff 12 T December p. 60 FCC vetoes AT&T bundling of free

CPE with services W July p. 21
Greene says why he nodded at Pactel
and went Nyet to Nynex W March
p. 25

GTOC out in cold on ARCO appeal W November p. 46 House to FCC: What's behind the

TeleStar affair? W April p. 25 Is AT&T selling smoke with its Tariff 12 VTNS Option IV? W October p. 46

Justice Dept.: No need for an SS7 switch in every LATA W July p. 21 Local access players get the deep freeze down in P.C. W p. 22

Markey complains of elitist data highway W November p. 46

Price caps get a final go, but some see a loophole W April p. 25 Rumors fly on Bush's likely FCC choices W February p. 25 Rumors fly that Hollings called for Pat-

rick's head W May p. 25 Semiconductor industry's fate linked to HDTV W February p. 25

Sikes, quakes, BOCs: Whole lotta shakin' goin' on W December p. 46 The fight to cut th best under-the-table tariff deal goes on W October p. 46 The high-tech gizmo thing W October

Upstream, downstream HDTV W April p. 26

Your service application? Uh, the dog ate it W July p. 21

#### REGULATIONS, STATE & REGIONAL

AT&T says LECs dumped dud data W March p. 26

Database add-ons NP April p. 168
Maine cooks up ONA brew, give BOC
competitors more to say W January
p. 25

Mid Atlantic: Accunet links up with Bell Atlantic's PDN T April p. 41

Mid Atlantic: AT&T announces VSAT bypass option for business users T August p. 33 Mid Atlantic: Bell of Pa. unveils new

and improved gateway service T May p. 39 Mid Atlantic: Critics charge ANI and

# FROM THE MAKERS OF THE NETWORK PROBE

7020

High Speed Test Capabilities with Basic Rate ISDN Upgrade Option.

#### FEATURES:

- Protocol Analysis Emulation to 400 Kbps
- BERT 50 bps 128 Kbps
- 9 80 x 25 Character STN Backlit Display
- VT-100 220 Terminal
- Remote Control
- Auto Configure\*
- 1 MByte of RAM
- Disk Storage 2 MByte
- Clock Rate Measurement
- Multiple Interface Lead Status
- Basic Rate ISDN Option
- Battery Powered
- Weight 76 Pounds (3.45 kg)

## 7100

The Ultimate Network Instrument with Complete T-1/2Mb Test Functions and Primary and Basic Rate ISDN Option.

#### FEATURES:

- Drop Insert T1 Tests
- Protocol Analysis Emulation to 400 Kbps
- Bert 0-2 048 MB
- Jitter Testing
- Tone Sweep Generator
- . 80 x 25 Character STN Backlit Display
- ISDN Option
- Dual Trace Oscilloscope 10 MMZ
- VT-100/220 Terminal
- Remote Control
- Auto Configure
- DVOM dB Ohms Continuity
- Disk Storage 2MB

## 6600

6610/6620/6630/6640 Series II

Portable, High Speed, Multi-Instrument, Protocol Analyzers/Data Line Monitors for the Data/Telecommunications Industry.

#### FEATURES:

- Data Line Monitor
- Protocol Analyzer
- Portable Terminal
- BERT BLERT
- · DVOM
- Continuity Cable Tester
- dB Level Meter
- Power Line Monitor
- Lead Status Monitor
- Programmable Emulator
- High-level Network Analysis
- Speaker Monitor
- Rechargeable Battery Power
- Non-volatile Memory
- 1 MB Disk Option



## NCC, THE WAN DIAGNOSTIC EXPERTS PRESENTS THE LATEST IN STATE-OF-THE-ART NETWORK TEST EQUIPMENT

The NCC Network Probe \* family offers an ever growing number of options to fit your network testing needs.

1-800-451-1984

Call for more information!



10120 West 76th Street

Eden Prairie, MN 55344-9814 (612) 944-8559

Easylink Telex No. 5106011221 • NCC Probe UQ • FAX (612) 944-9805

Circle 130 on Reader Service Card

# MODEMS FOR THE MASSES.



## First in V.32 features and price at only \$795

Advanced DSP technology allows optional FAX

The same company that produced the *first* single board V.32 modem and the *first* single chip V.32 DSP has done it again! DSI is now the *first* V.32 company with built-in **Group 3 FAX** at 9600 bps. *First* to put

MNP® 5 into a V.32 and *first* to have a V.32 PC card, DSI has again proven to be the leader in V.32 technology.

Look for DSI's aggressive low power CMOS design to be the *first* laptop V.32 modem. For more information, contact Digicom Systems, Inc., 279 Sinclair Frontage Road, Milpitas, CA 95035. Telephone (408) 262-1277; FAX (408) 262-1390.



DIGICOM SYSTEMS INC.

Modems for the Masses.

anonymity are incompatible T June p. 33

Mid Atlantic: Gateway-mania hits N.Y., too T January p. 41

Mid Atlantic: RBOC rebounds with gateway proposal after Greene rejection T March p. 41

Midwest: a blizzard of gateways T January p. 41 Midwest: Long-distance rates cut T

February p. 41 Midwest: SWBT links packet and ISDN

Midwest: SWBT links packet and ISDN services T August p. 33 New England: Co-LAN service gets

nod in Massachusetts T March p. 41 New England: Rebates for post service T February p. 41

New Jersey Bell bypasses the busy signal T June p. 33

New Southern Bell tariff could have ONA implications nationwide W June p. 21

PUC goes after telcos violating customer privacy W March p. 26 Southeast: Virginia-based carrier wants piece of PTAT T July p. 33

Southeast: Voice mail for phone repair T February p. 41

Southwest: AT&T and SWBT hook up to provide info links T July p. 33 Southwest: St. Louis students to get farther from teachers and closer to TV T May p. 39

Southwestern Bell gets into voice and CATV tests T June p. 33 Washington: Court upholds Illinois tax

on interstate calls T February p. 41
West Coast: Pac Bell's electronic messaging and on-line marketing services T August p. 33

West Coast: Pacifiel launches commerical ISDN T January p. 41 West Coast: Will US West divvy up its rate of return? T June p. 33

West: Pac Bell launches national yellow pages T May p. 39

West: Pac Bell offers new flexible data service T April p. 41 West: Pac Bell to offer Centrex ISDN T July p. 33

#### SATELLITES

American VSAT operators eye a turbulent two-way European market NF May p. 62

Citicorp's scheme to shoehorn data into TV transmissions NF March p. 62

'coming: A 'network' of shared hubs D November p. 33

Coming: True transoceanic aircraft communication D February p. 16 Czech merchant marine uses data driven satellites to stay on course NF April p. 52

PTTs seek to preempt VSATs DL May p. 69

Satellite gateway NP August p. 155 Satellite gateway serves Europe NP September p. 188

Satellite services NP March p. 210
Send 45-Mbit/s with satellite modern
and protection switch NP March
p. 195

U.S. supplier to launch cheap and tiny European satellite service NF August p. 48

When big birds have little ears IW September p. 67

#### SECURITY

Big hacker pleads guilty DL May p. 69

Biggest of hackers, says U.S. Government DL February p. 66 British rail takes the steam out of a

virus NF April p. 58 Data cops to stalk binary boards W

June p. 22
Encrypting fax tansmissions before they reach the phone line NP June p. 123

Encryption simulator NS January p. 220 Encryptor has MNP Class 5 modern plus remote control NP January p. 185

End-to-end encryption NP April p. 170 Market probes cracks in data nets W March p. 26

Network security NS June p. 166 Password protection NP March p. 214 Protect sensitive mail with security options NS November p. 195

Secure device meets Federal regulation for protection of data NP March p. 195

Secure-ware NS January p. 219
Security and access programs for LAN
users NS September p. 196
Security Ethernet NS May p. 209
Security hardware NP February p. 185

TCP/IP security for VAX/VMS computers NP November p. 188

#### SERVER

16-channel terminal server handles 9.6 kbit/s NP March 21 p. 71 Accelerator board boosts speed of NFS NP September p. 173 Porcesees I AN experientings to VAY

Box serves LAN applications to VAX terminal users NP October p. 190 DEC ups the ante with mini-based LAN server NP November 21 p. 76

Dedicated server brings faxing to Novell nets NP April p. 154 Ethernet server links up to 128 termi

nals NP October p. 180
File servers provide large workgroups
with 2.5-Gibytes storage NP January
p. 180

Jupiter siring Herculean server LL June 21 p. 13

Network servers use NetWare software NP October p. 179

PC-based server unites Windows environment NS October p. 204 Peripheral expands LAN storage ca-

pacity NP September p. 176 Server access NS February p. 200 Server cards extend net communications NP October p. 198

Specialized database servers on the horizon LL. November 21 p. 14 Terminal server adds TCP/IP support

NP December p. 174 Terminal server adds third protocol

stack NP October p. 198 Terminal server embraces DEC LAT NP December p. 171

Unit gives LAN users access to CD ROMs NP September p. 177 Unit links remote AppleTalk LANs NP September p. 176

What NeXT in networking? How about an erasable optical server NF January p. 56

X-windows station acts as client and server NP November p. 180 'Hefty' servers seek a niche in the LAN environment NF June 21 p. 17

'Multilingual' server dishes up data and applications PP October p. 167

#### SNA

A quiet IBM protocol bomb with SAA

links D April p. 15 Access to SNA via PCs NS June p. 153

Converter lets ASOII devices access SNA Ni³ June p. 129

Data stream dreams: IBM moves toward auniversal terminal NF August p. 42

Device manages SNA network via NetView NS December p. 186 Distributed gateway on the PC makes an SNA connection NS February

p. 197
Extended emulator NS May p. 210
Five-port protocol converter changes
ASCII to 3270 NP August p. 140

IBM support NS July p. 175 Is SNA via Token Ring fitting a square peg in a round hole? NF May p. 45 LAN-to-host NS June p. 153

Lan-to-host NS June p. 153

Late nights with VTAM: One user's struggle with peer-to-peer SNA F June p. 79

Link for SNAs NS February p. 198 Linking SNA to packet nets; PAD built in NS January p. 217

Multiprotocol talk NS April p. 192 Network architectures interchange routines NP November p. 186

New VTAM increases network speed NF December p. 54 Optimizing the 3270 link: A packet net

Optimizing the 32/0 link: A packet her helps, but more fixes are needed F September p. 131

Portables get IBM PS/PC NS February p. 199

Session Manager runs on virtual machines NS September p. 200 SNA and OSI: Which manages multivendor networks best? F April

p. 133
The hidden costs of using an SNA back bone for X.25 traffic F November p. 129

Two high-speed SNA products boost LAN performance NP April p. 161

#### SOFTWARE

... but will varying API's mar the nuptials W August p. 21 Court splits icon ruling DL May p. 68 Database link NS July p. 169 DOS, Unix applications expand with software NS September p. 196 Enhanced RPC NS May p. 216

Faster DOS NS January p. 220 lcons and iconoclasm, as 'shred' stands in for 'trash' LL June 21 p. 14

Software links up to 12 users without a LAN NP March 21 p. 73

#### STANDARDS

10base-T goes to letter ballot DL May p. 68

A third world tax scheme tucks it to the industry D March p. 16

A user's guide to the CCITT's V-series modern recommendations F June p. 109

Arcnet still seeks a standards certificate LL June 21 p. 13

ARCnet trys a standards ploy LL. March 21 p. 13 CCITT group signs off on multimeg

MAN scheme D August p. 16 Committee hopes to see a tree take route LL June 21 p. 13 COS goes commercial W December p. 46

Ethernet: An ISO standard, at last LL.

March 21 p. 13

Head-butting in the fax board industry LL September 21 p. 14

Initial ISO executions fall short D June p. 15 Internet task force cleans up TCP/IP

specification NF September 21 p. 17 Is the 802.6 MAN protocol standard

flawed? D December p. 33 LAN lab languishes LL September 21 p. 13

Looming de facto standard gets 'We use that?' reaction NP June 21 p. 84

Members mutter as COS cuts deep into its staff NF September p. 52 Metropolitan area network\_update: The global LAN is getting closer F De-

cember p. 111 Moves toward a standard way to benchmark LAN products LL March

21 p. 14

New router specs introduced for multivendor TCP/IP networks NIF No-

vember 21 p. 20 New standards coming: Intra-LAN messaging and security LL March

21 p. 14
Official telephone wire standard gets
mixed LL November 21 p. 13
OTF rounds up token ring specs LL.

September 21 p. 14

Rosy picture painted for video-codec standards D January p. 16

Some books for Valentine's Day giftgiving DL February p. 67 Standards update: CCITT Study

Group XVII meets in Geneva NF April p. 60 Token ring bridge standard still years

away LL. November 21 p. 13 Watch that MAN D November p. 34 WATTC-88: Choosing whatever suits a member country's point of view NF January p. 62

Why you don't have to worry about fiber standards D July p. 16

#### SWITCHING

Digital patch panel merges PBX and LAN technologies NP May p. 184 Expand host-to-host channels from 16 to 32 NP October p. 194 Switch shares line between voice, data

NP September p. 171
Switch software for self-configuring
nets NS September p. 202
Three-way switch sorts out fax, mo-

dem, phone NP December p. 173 Virual circuit switch can consolidate dispersed networks NP May p. 186 What users like and don't like about digital matrix switches F March p. 156

Wide-area access NS July p. 169

T1/T3/E1
... could lead to T1 links on the cheep
D April p. 16

A bunch of witches in T1's pot EN November p. 39

A tale of two standards-the T1 ESF (r)evolution F October p. 143 Adding to your net worth with T1-to-LAN devices F September p. 103

As T1 rates drop, so does the analogline crossover point NF June p. 48 BERT acts as a T1 repeater NP December p. 160

Big T1 giveaway: New option adds 192 kbit/s of bandwidth NF February

## REDUCE DIAL LINE COSTS ONE LINE DATA QUALITY PBX

#### MICRO CALL DIRECTOR

Share One Line with 4 Dial-up Data Communication Devices. Control Line Switching by Modern, Fax or DTMF Tones.

#### DIRECT DIAL LINE TO YOUR APPLICATION

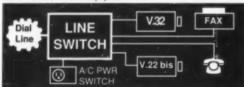
High or Low Speed Moderns, Voice Line, Data Logging, System Configuration.

#### LOCAL OR REMOTE CALL TRANSFER

Ring Desired Device at Any Time. Generates Busy and Ringback Signals. Intercom Calling.

#### POWER AND A/B SWITCH CONTROL

Turn Equipment On or Off as Needed. Remote Power Reset. Control Remote Data A/B Switches with Tone Commands. Save Power, Extend Equipment Life.





170 COOLIDGE AVENUE ENGLEWOOD, NEW JERSEY 07631 (201) 569-6464 FAX (201) 894-0939

Circle 133 on Reader Service Card

## A BREAKOUT BOX BUILT TO LAST-GUARANTEED!



#### Circle 132 on Reader Service Card

#### **Index 1989**

p. 49

Clear-channel support NP July p. 152 Digital service option increasease data rates NP October p. 200

Eight-port T1 mux makes configuration more flexible NP April p. 156 Rexible mux for fractional-T1 users NP

September p. 182 Fractional T1 compatibility: What it

Fractional T1 compatibility: What it means for muxes NF November p. 45

Fractional T1 plus communications proces sors unveiled NP May p. 174 Fractional T1 will boom-but not before 1991 EN July p. 28

Fractional T1: Carriers carve out bandwidth for users F November p. 84

Get ready for T3 networking F September p. 82 MCl's volume pricing plan for T1 ser-

vice T July p. 34 Multiplexer includes fractional T1 support NP October p. 185

New MCI rates for T1 channel service T December p. 60

PC as a DACS? Would you believe 56 kbit/s via a PC's serial port? NF May p. 58 Promises T October p. 59

T1 outage ahead: A backup strategy could save your job F July p. 75 T1 business exceeds all belief EN Sep-

tember p. 40 T1 mux merges public, private net-

working NP November p. 176 T1 muses allow speeds below T1 rate, let voice PABXs send data NP April p. 158

T1 muxes, T1 muxes everywhere EN April p. 35

T1's future? Color it green IW May p. 73

T1/DS-1 test set analyzes signaling and performance NP April p. 161 T3 or not T3? Timeplex to be there EN

September p. 40
The math behind fractional T1: The sum sinks as the parts rise NF April p. 56

Timeplex rolls out LINK/100 D October p. 33

US Sprint's volume pricing plan for T1 T July p. 34

Users fret FCC dtermines who will regulate T1 voltage NF September p. 59

TCP/IP

DOS gets TCP/IP NS January p. 221 Gateway allows TCP/IP file transfers NS September p. 194

Gateways include logical links for joining mainframes via TCP/IP NP February p. 171

Giltch turns in this TCP/IP detective tale F June 21 p. 53 New Internet specs improve perfor-

mance NF December p. 48
Parallel-processing networks NS August p. 159

PCs on TCP/IP nets can use Windows NS September p. 198 Send TCP/IP data over SNA networks with new gateway PP October

p. 157 Seven packages tie PCs and hosts together on TCP/IP NS October p. 203

Switch software transports X.25 packets via TCP/IP networks PP October p. 161

TCP/IP for DECnet NS March p. 232 TCP/IP interpreter NS March p. 237

TCP/IP network management with an eye toward OSI F August p. 123 TCP/IP plus NS May p. 217

TCP/IP session extends from Macs to mainframes NS March p. 225 TCP/IP software gains E-mail enhance-

ments NP September p. 186
TCP/IP to OSI NS February p. 203
The great TCP/IP flap continues as vendors scurry for solutions NF April

Two kinds of LAN access NS July p. 163

VAX-to-Cray transmission speeds up NS January p. 217

VMS TCP/IP trade-in NP February p. 185

UNIX

DEC's answer to IBM's SAA adds Unix support D February p. 16

Networking family adopts Unix 386 PCs NP November p. 186 Program Links Unix, SNA NS February

RISC-y business shows promise EN uanuary p. 33

Unix file transfers work on IBM RTs NS September p. 194 Unix release is hardware independent

NS April p. 187

Unix security NS May p. 210

**VALUE-ADDED NETWORKS** 

... but promises an international VAN in early 1990 EN October p. 40

18 Packet-size perestroika NP January p. 192

An X.400 tweak to transfix VANs D April p. 16

Entry-level hybrid networking NP February p. 183

Integrating enterprise defined networks NP December p. 176 New switch, standards for data net-

New switch, standards for data network NP July p. 148 Prime-time rates NP June p. 140

Service joins regional packet networks with long-haul links PP November p. 161

Services expanded NP April p. 168 SNA-to-X.25 links NP March p. 213 STET overpaid for GEISCO unit EN August p. 27

Telenet offers nationwide transport to local packet networks W October p. 46

Telenet's new Japanese link . . . W August p. 22

Tymnet provides increased access NP December p. 176 Tymnet will travel to Texas and beyond

with tariffed T1 NF April p. 56

VAN access charge resurfaces in local telcos\* ONA schemes W May

local telcos' ONA schemes W May p. 25

#### VOICE SYNTHESIS/RESPONSE

Cray power to phone in half-decade D November p. 34

Switch joins data processing to voice applications NP July p. 141 Voice processing NP April p. 166 VS Voice-messaging NS March p. 237

